

We Claim:

1. A medical screw and driver system, comprising:

(A) an elongated screw having external threads and an internal bore extending through said screw at least a portion of the length of said screw, said screw being at least partially formed from a bioabsorbable material;

(B) an elongated driver having a non-circular cross-sectional shape approximating the cross-sectional shape of said bore, said driver insertable into said bore and being matingly received therein to transfer rotational motion of said driver to said screw, said bore exhibiting a closely mating shrink-fit relative to said driver.

2. The system of Claim 1, wherein said driver and said bore have a mating taper, each exhibiting a diminishing cross-sectional area in the direction of insertion of said driver into said cannula

3. The system of Claim 1, wherein said bioabsorbable material shrinks upon heating.

4. The system of Claim 3, wherein said shrinkage is due to crystallization of said bioabsorbable material.

5. The system of Claim 3, wherein said shrinkage is due to stress relaxation of said bioabsorbable material.

6. The system of Claim 3, wherein said bioabsorbable material is selected from the group consisting of aliphatic polyesters, polyorthoesters, polyanhydrides, polycarbonates, polyurethanes, polyamides, and polyalkylene oxides.

7. The system of Claim 6, wherein said screw has an additive to the composition thereof selected from the group consisting of bioabsorbable glass, bioabsorbable ceramic, biocompatible glass and biocompatible ceramic.

8. The system of Claim 1, where said screw is composed of an 15/85 (vol/vol) blend of TCP/PLA.

9. The system of Claim 1, wherein said screw is an orthopedic screw.

10. A method for increasing driver-to-screw contact in a medical screw and driver system having an elongated screw formed at least partially from a bioabsorbable material and having external threads and an internal bore with a non-circular cross-sectional shape extending through the screw at least a portion of the length of the screw and an elongated driver having a non-circular cross-sectional shape approximating the cross-sectional shape of the bore, the driver insertable into the bore and being matingly received therein to transfer rotational motion of said driver to the screw, comprising the steps of:

(A) inserting the driver into the bore of the screw;

(B) heating the screw

(C) allowing the screw to cool, said steps of heating and cooling inducing said screw to shrink whereby said bore exhibits a closely mating shrink-fit relative to said driver.

11. The method of Claim 10, wherein said screw is heated in said step (B) to a temperature at least equal to the glass transition temperature of said screw.

12. The method of Claim 10, further including the step (B2) of maintaining the screw at an elevated temperature after said step (B) of heating and prior to said step (C) of allowing the screw to cool.

13. The method of Claim 12, wherein the driver is heated simultaneously with the screw during said step (B) of heating.

14. The method of Claim 12, wherein said steps of (B) heating, (B2) maintaining and (C) allowing the screw to cool result in the relaxation of the internal stress of the screw.

15. The method of Claim 12, wherein said steps of (B) heating, (B2) maintaining and (C) allowing the screw to cool, result in a partial crystallization of the screw.

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16. The method of Claim 12, wherein the screw is composed of 15/85 (vol/vol) blend of TCP/PLA.

10 17. The method of Claim 16 wherein said step (B) of heating includes raising the temperature of the screw from room temperature to a temperature of about 70°C and said step (B2) of maintaining includes holding the temperature of the screw at about 70°C for about 4 hours.

15 18. The method of Claim 16 wherein said step (B) of heating includes raising the temperature of the screw from room temperature to a temperature of about 70°C and said step of maintaining includes holding the temperature of the screw at about 70°C for about 4 hours, and further comprising the steps (B3) of heating the screw to a temperature of 100°C and (B4) maintaining the 100°C temperature for 8 hours before said step (C) of allowing the screw to cool.

20 19. The method of Claim 11, wherein the screw is heated in said step (B) to a temperature about 5°C to 15°C above the glass transition temperature.

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20. The method of Claim 10, further comprising the step (D) of withdrawing the screw from the driver and step (E) of replacing the screw on the driver in the same relative orientation that the screw and driver were in when said step (B) of heating was conducted.

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